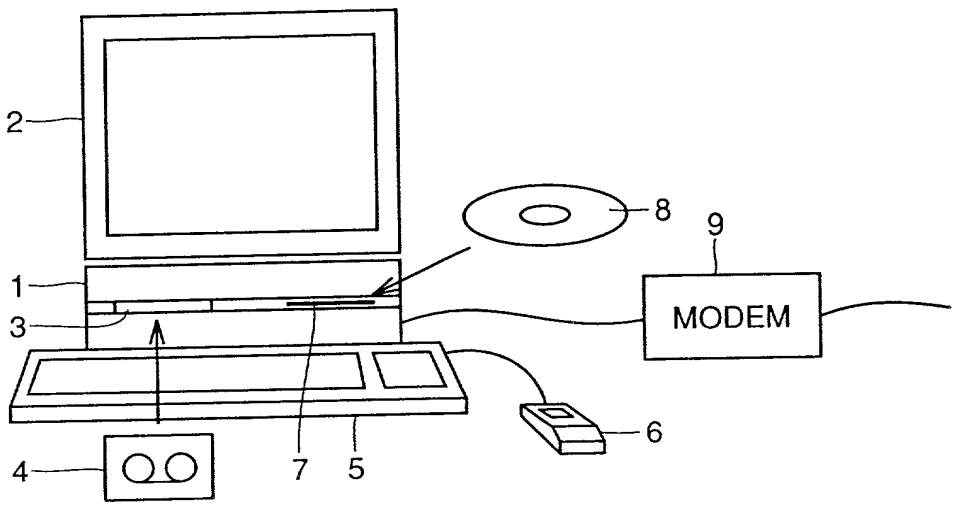
FIG.1



JP2020-529760

FIG.2

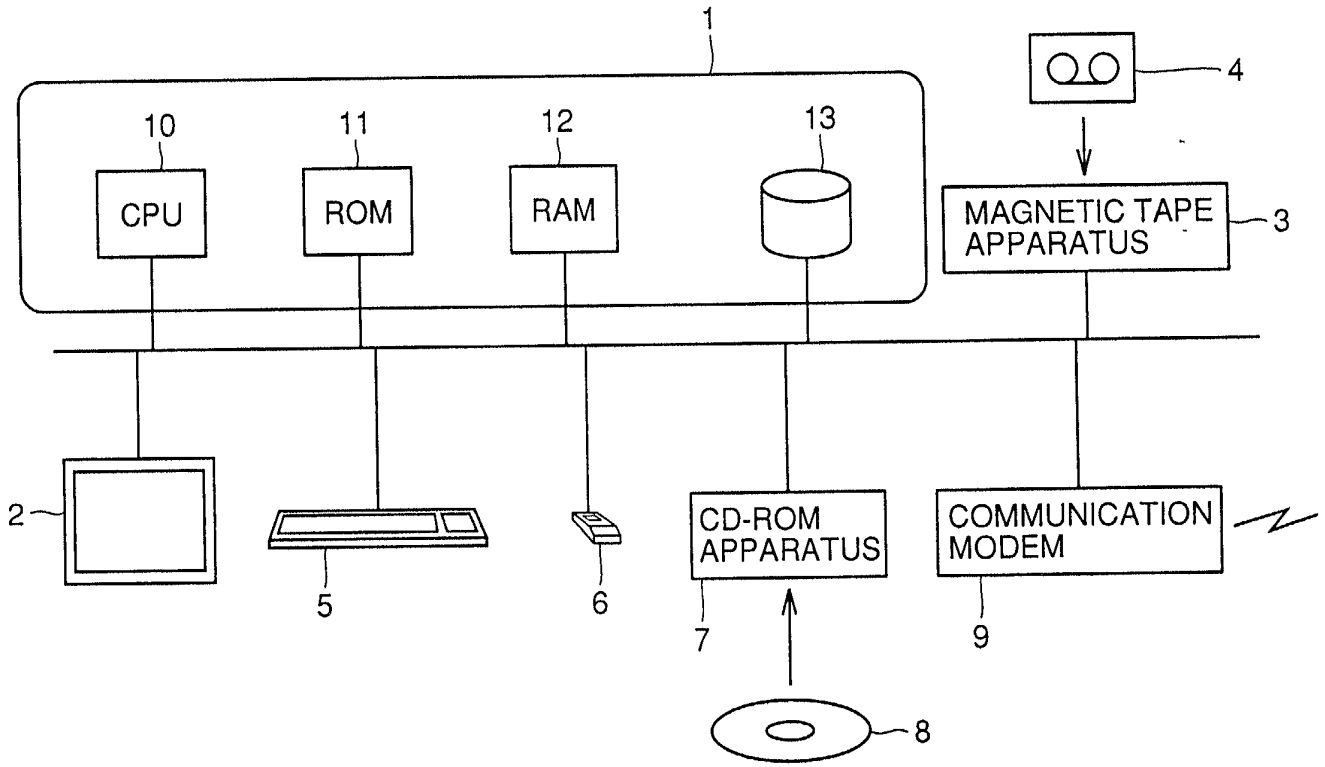


FIG.3

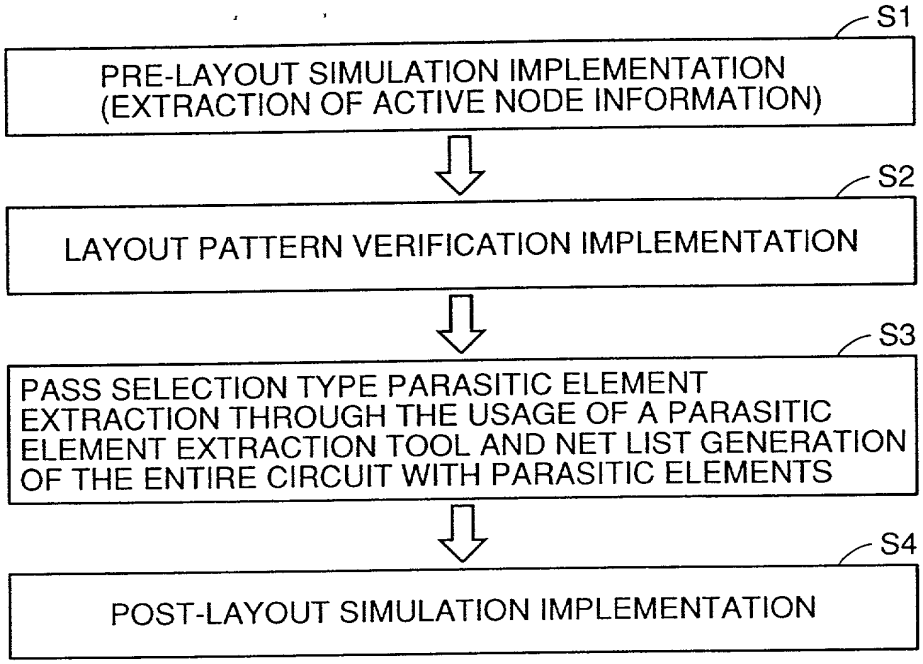

S1
PRE-LAYOUT SIMULATION IMPLEMENTATION
(EXTRACTION OF ACTIVE NODE INFORMATION)
S2
LAYOUT PATTERN VERIFICATION IMPLEMENTATION
S3
PASS SELECTION TYPE PARASITIC ELEMENT
EXTRACTION THROUGH THE USAGE OF A PARASITIC
ELEMENT EXTRACTION TOOL AND NET LIST GENERATION
OF THE ENTIRE CIRCUIT WITH PARASITIC ELEMENTS
S4
POST-LAYOUT SIMULATION IMPLEMENTATION

FIG.4A

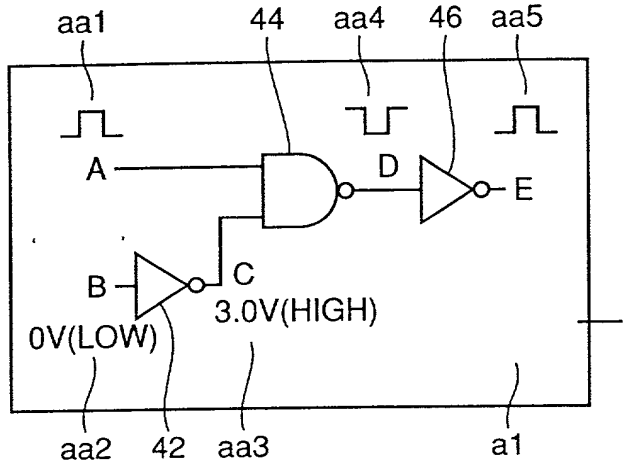



FIG.4B

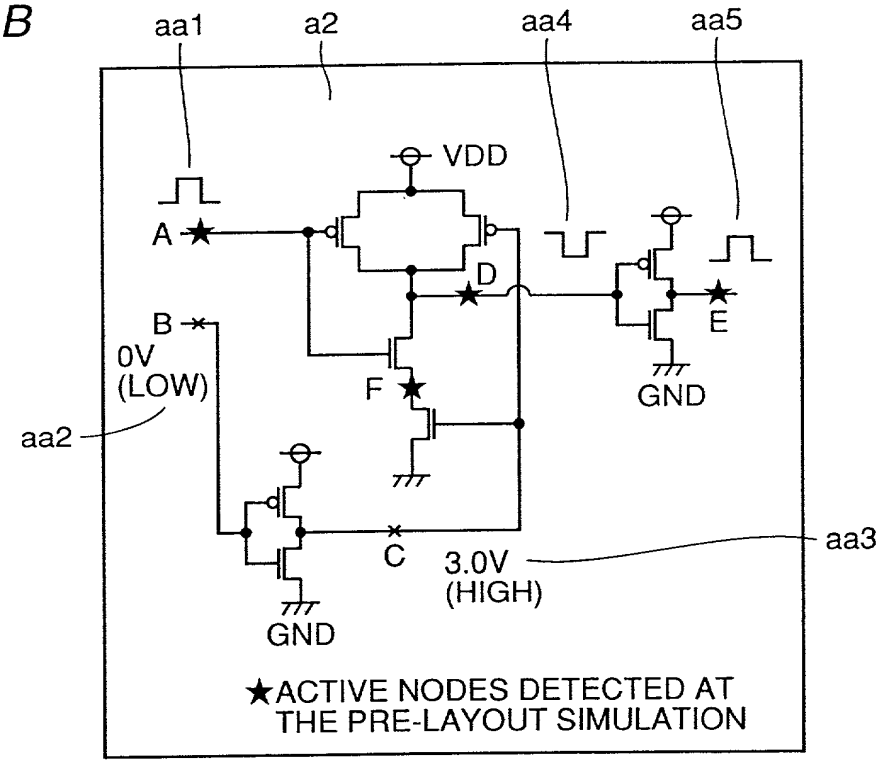



FIG.4C

FIG.5A

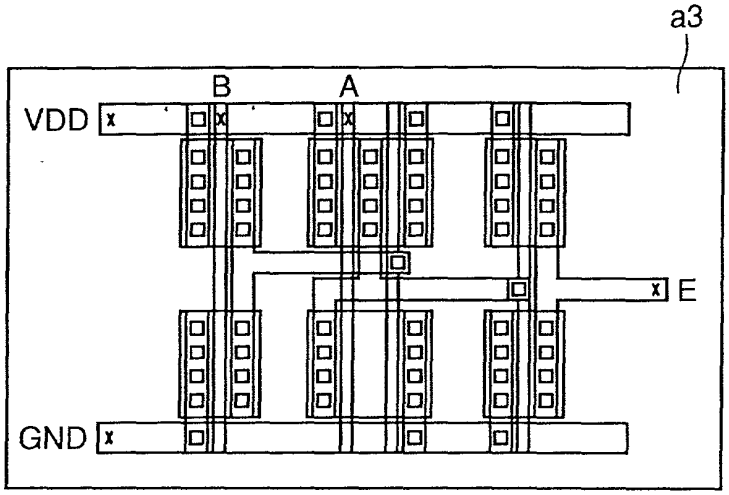



FIG.5B

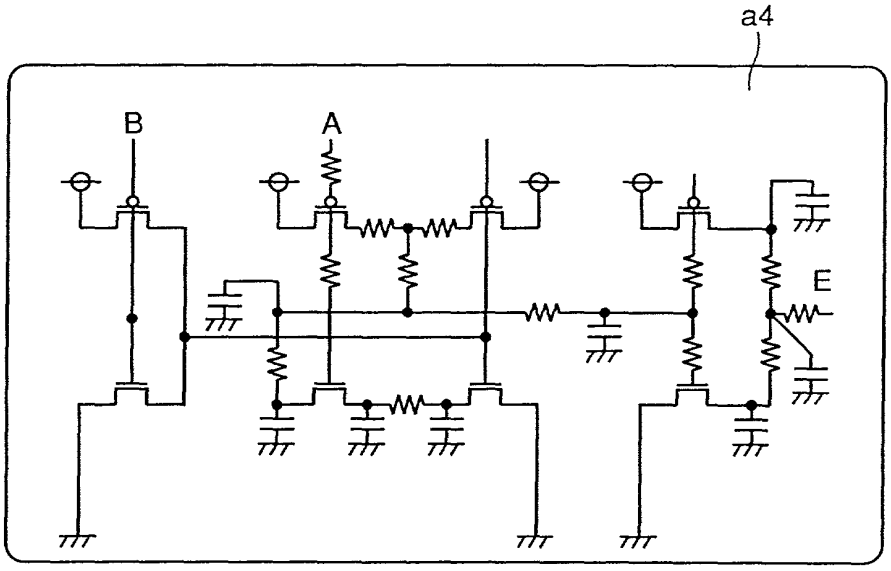


FIG.6

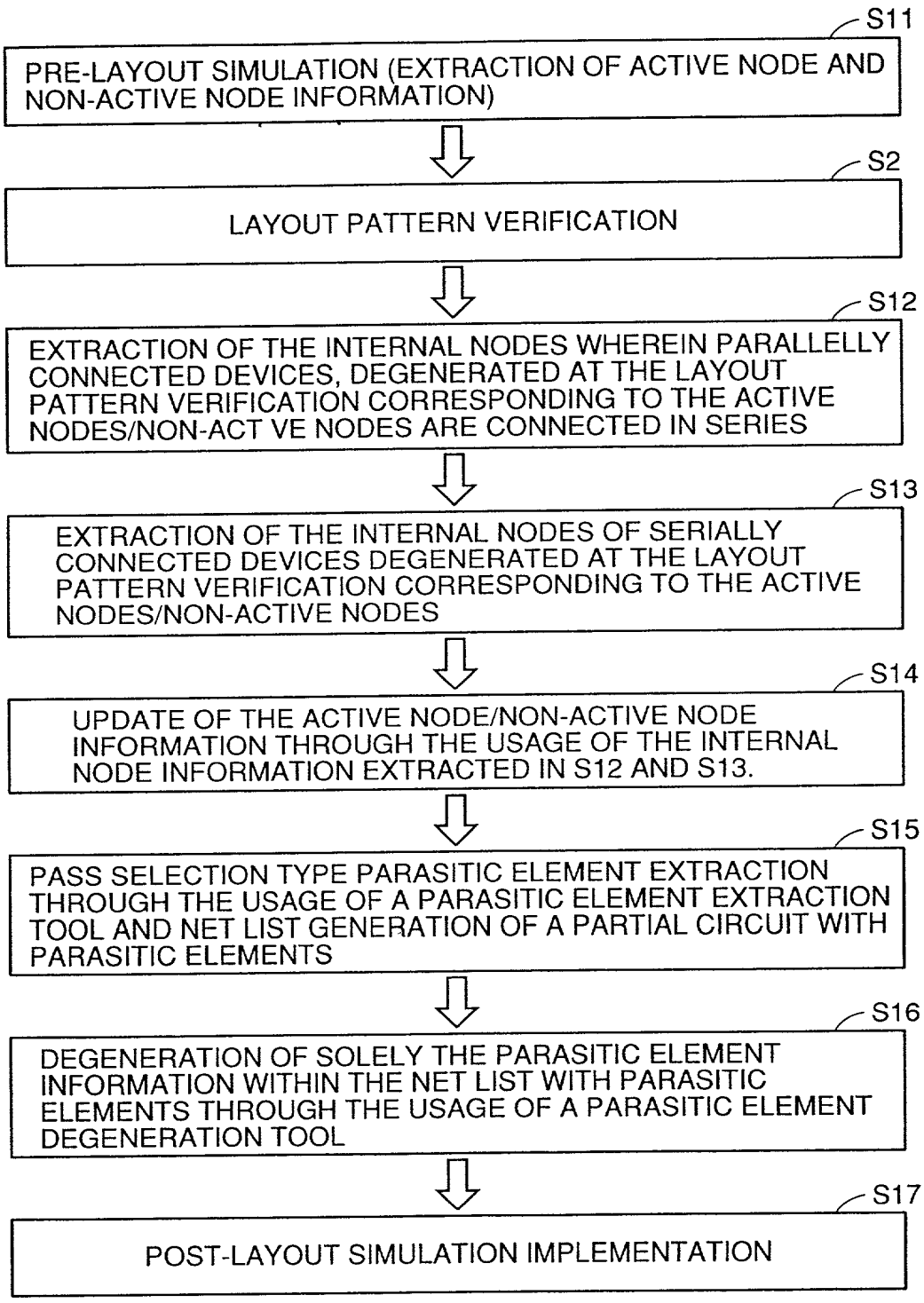

S11
PRE-LAYOUT SIMULATION (EXTRACTION OF ACTIVE NODE AND NON-ACTIVE NODE INFORMATION)
S2
LAYOUT PATTERN VERIFICATION
S12
EXTRACTION OF THE INTERNAL NODES WHEREIN PARALLELLY CONNECTED DEVICES, DEGENERATED AT THE LAYOUT PATTERN VERIFICATION CORRESPONDING TO THE ACTIVE NODES/NON-ACT VE NODES ARE CONNECTED IN SERIES
S13
EXTRACTION OF THE INTERNAL NODES OF SERIALLY CONNECTED DEVICES DEGENERATED AT THE LAYOUT PATTERN VERIFICATION CORRESPONDING TO THE ACTIVE NODES/NON-ACTIVE NODES
S14
UPDATE OF THE ACTIVE NODE/NON-ACTIVE NODE INFORMATION THROUGH THE USAGE OF THE INTERNAL NODE INFORMATION EXTRACTED IN S12 AND S13.
S15
PASS SELECTION TYPE PARASITIC ELEMENT EXTRACTION THROUGH THE USAGE OF A PARASITIC ELEMENT EXTRACTION TOOL AND NET LIST GENERATION OF A PARTIAL CIRCUIT WITH PARASITIC ELEMENTS
S16
DEGENERATION OF SOLELY THE PARASITIC ELEMENT INFORMATION WITHIN THE NET LIST WITH PARASITIC ELEMENTS THROUGH THE USAGE OF A PARASITIC ELEMENT DEGENERATION TOOL
S17
POST-LAYOUT SIMULATION IMPLEMENTATION

FIG.7A

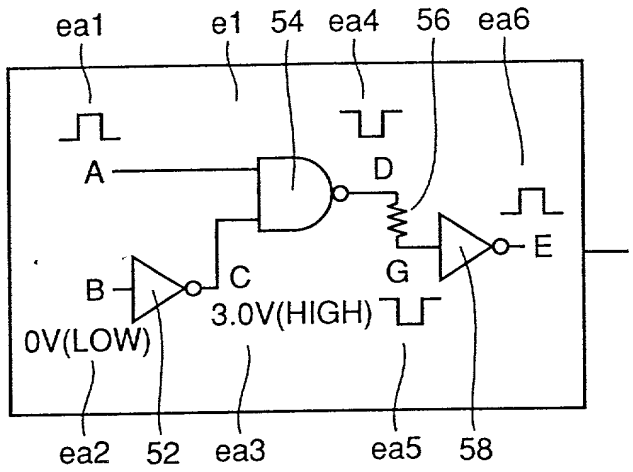



FIG.7B

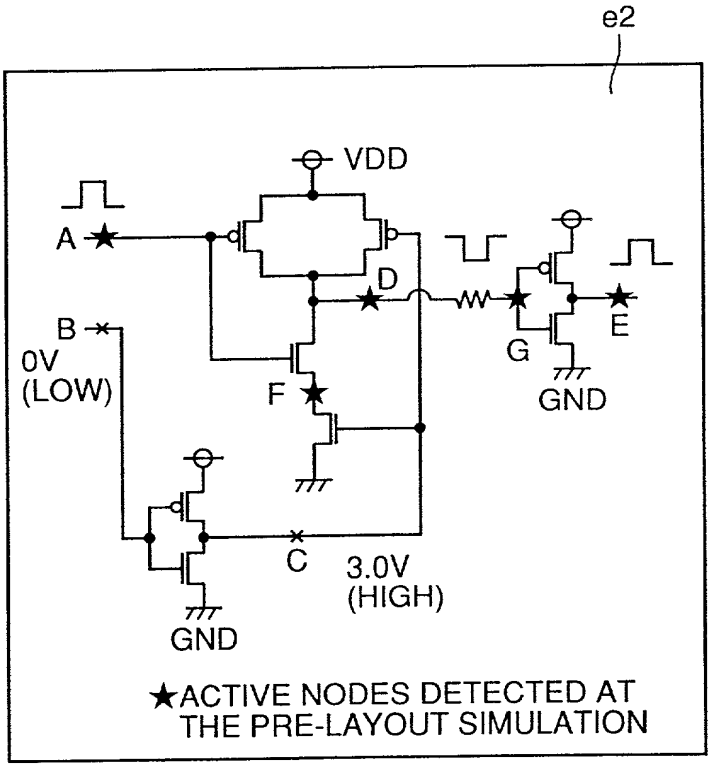



FIG.7C

(ACTIVE NODE INFORMATION)

| A,D,E,F,G | ea7 |
|---|---|

FIG.7D

(NON-ACTIVE NODE INFORMATION)

| C 3.0V | ea8 |
|---|---|

FIG.8A

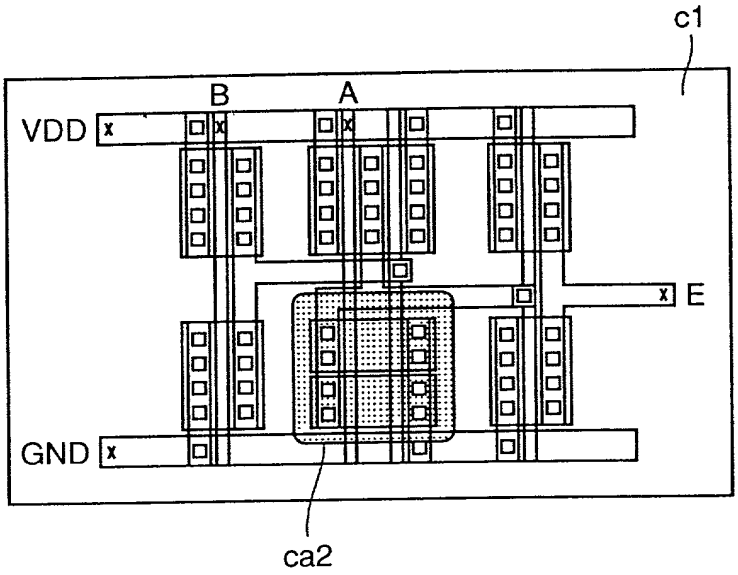



FIG.8B

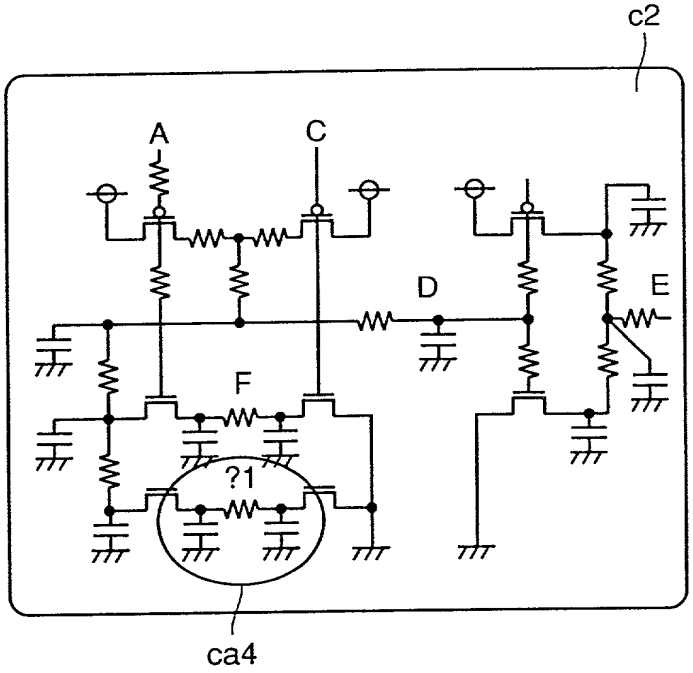


FIG.9A

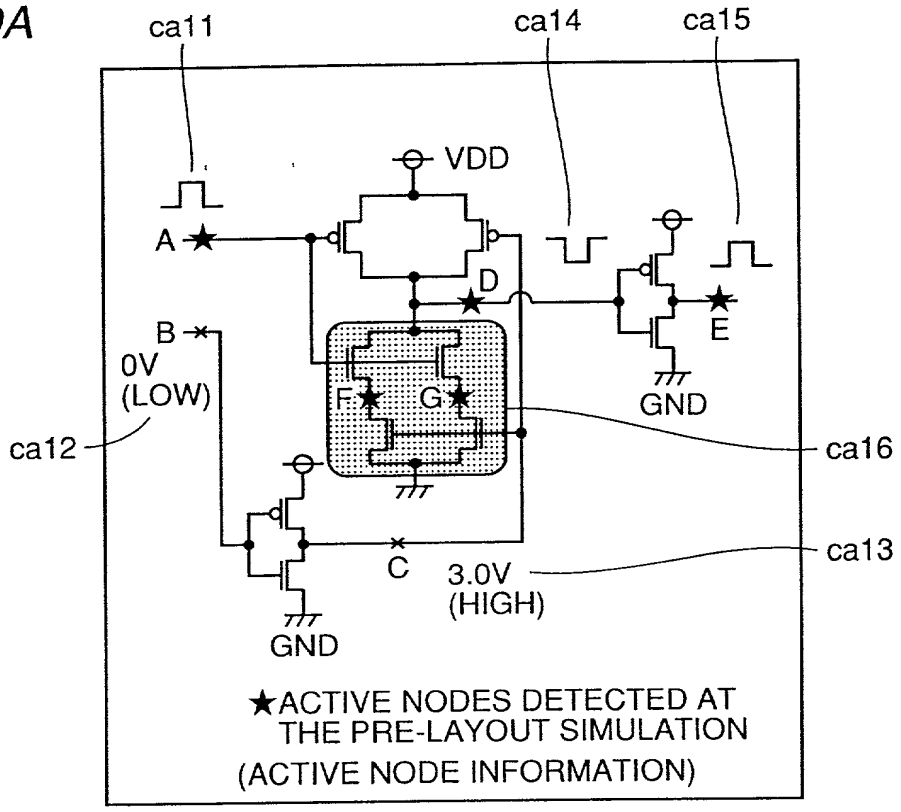

ca11
ca14
ca15
VDD
A
D
B
E
0V
(LOW)
F
G
GND
ca12
ca16
C
ca13
3.0V
(HIGH)
GND
★ACTIVE NODES DETECTED AT
THE PRE-LAYOUT SIMULATION
(ACTIVE NODE INFORMATION)

FIG.9B

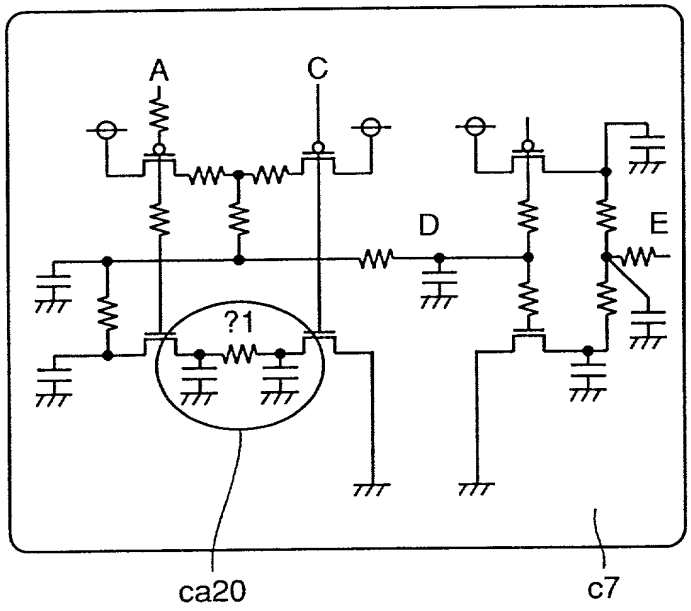

A
C
D
E
?1
ca20
c7

FIG.10A

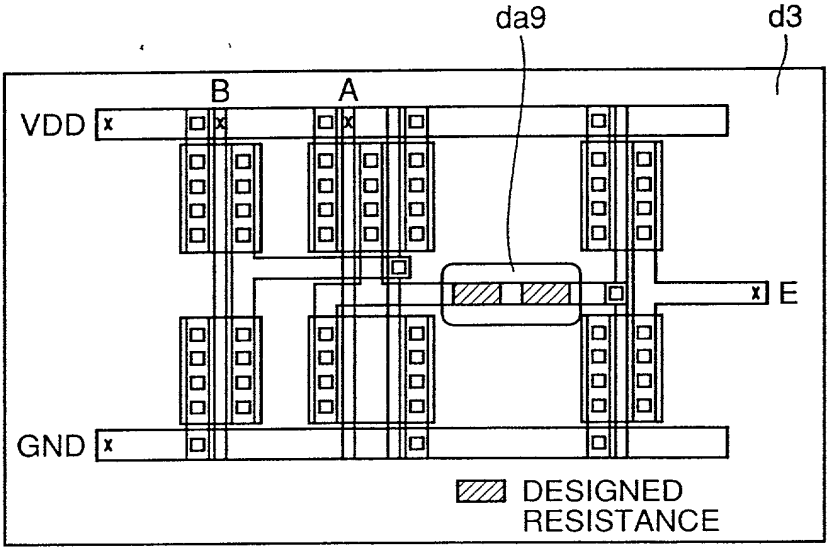



FIG.10B

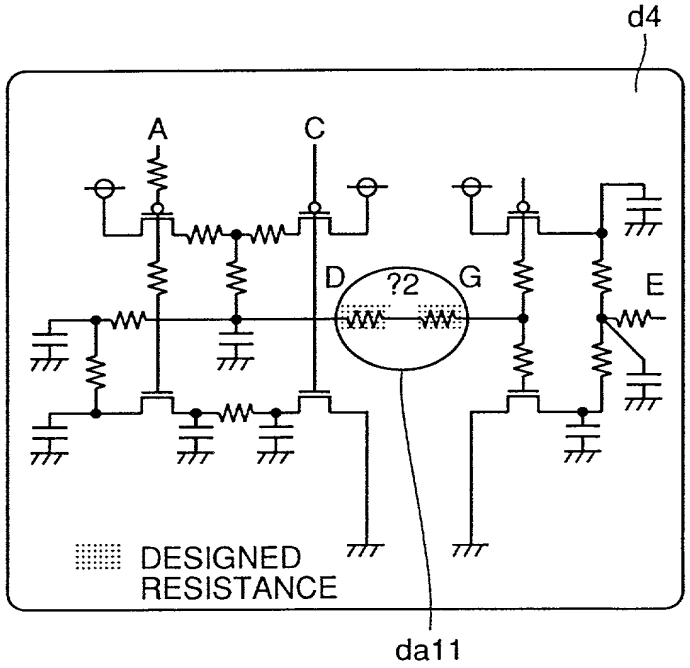


FIG.11

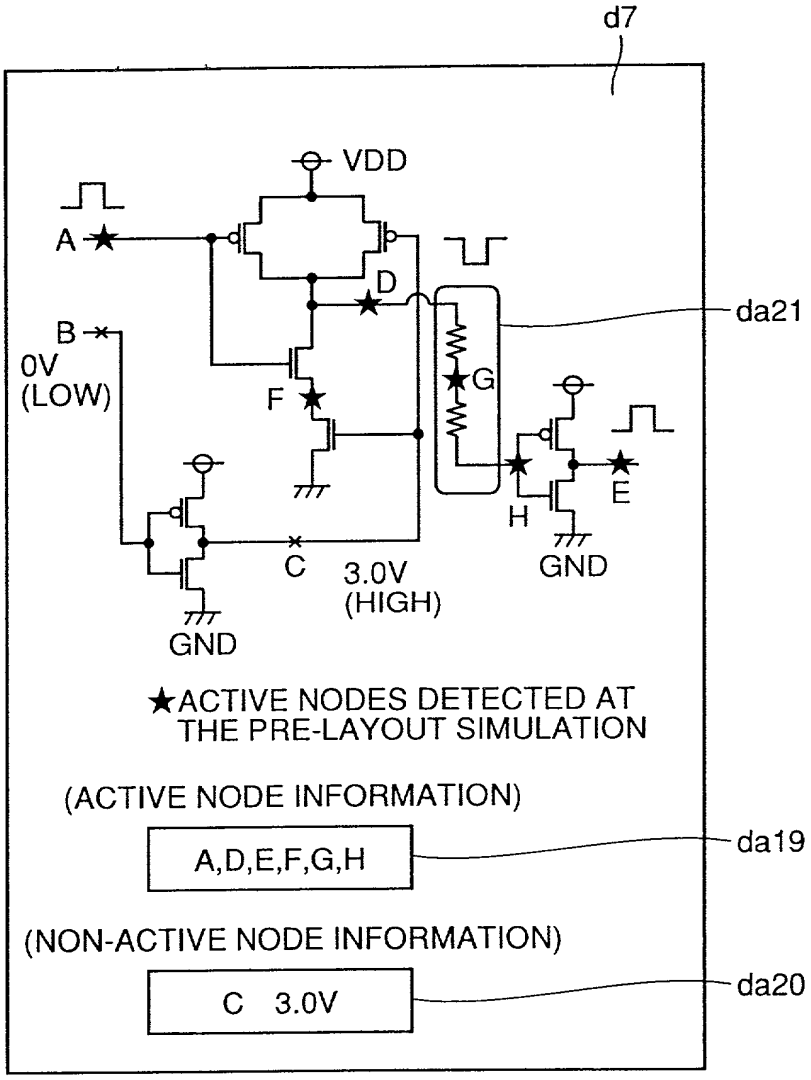

d7
VDD
A
D
B
0V
(LOW)
F
G
da21
E
H
C
3.0V
(HIGH)
GND
GND
★ACTIVE NODES DETECTED AT THE PRE-LAYOUT SIMULATION
(ACTIVE NODE INFORMATION)
A,D,E,F,G,H
da19
(NON-ACTIVE NODE INFORMATION)
C 3.0V
da20

FIG.12A

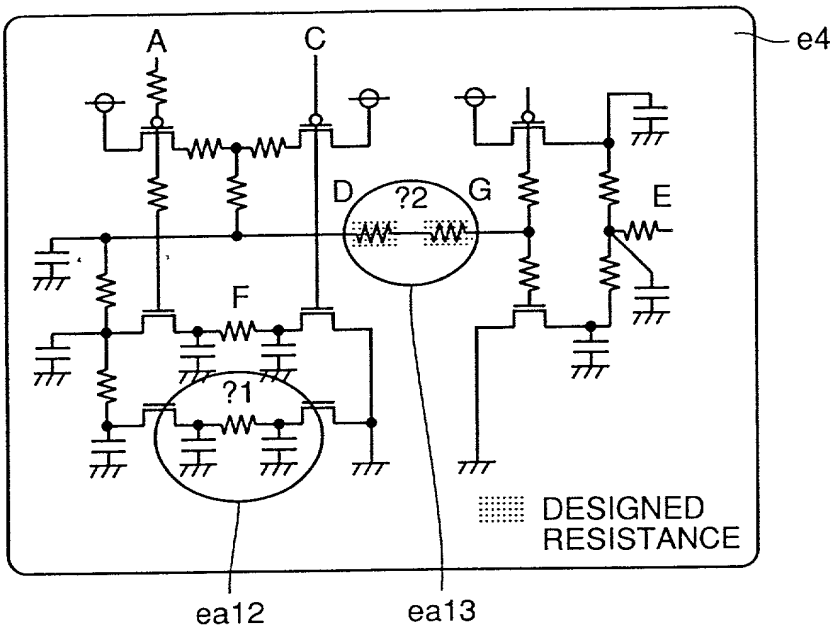



FIG.12B

(ACTIVE NODE INFORMATION)

A,D,E,F,G — ea7

(ADDITIONAL NON-ACTIVE NODE INFORMATION)

A,D,E,F,G,1,2 — ea11

FIG.12C

e5

| | | | |
|---|---|---|---|
| R1_1 | A#2 | A#3 | 2.0 |
| R1_2 | A#3 | A#4 | 3.0 |
| R1_3 | A#4 | A#5 | 1.0 |
| R1_4 | A#3 | A#5 | 4.0 |
| R1_5 | A#5 | A#6 | 1.0 |
| C1_1 | A#2 | GND | 0.1PF |
| C1_2 | A#3 | GND | 0.2PF |
| C1_3 | A#4 | GND | 0.2PF |
| C1_4 | A#5 | GND | 0.2PF |
| C1_5 | A#6 | GND | 0.1PF |

FIG.12D

e6

| | | | |
|---|---|---|---|
| RAA1 | A#2 | A#6 | 5.0 |
| CAA1 | A#2 | GND | 0.4PF |
| CAA2 | A#6 | GND | 0.4PF |

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